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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,447	02/06/2001	Moe K. Barani	130815.90026	3721

7590

05/31/2002

Michael J McGovern
Quarles & Brady
411 East Wisconsin Avenue Suite 2040
Milwaukee, WI 53202-4497

EXAMINER

NGUYEN, TRAN N

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 05/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/700,447

Applicant(s)
Barani et al

Examiner
Nguyen, Tran N

Art Unit
2834



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 1, 2002
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the PCT file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 2 and 5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson (US 5918728) in view of De Filippis (US 5233250).

Syverson substantially discloses the claimed invention (see the figure and cols 3-4).

Syverson only differs from the claimed invention in one respect that is a cylindrical metal housing forming a part of the rotor for receiving the permanent magnets (P.Ms).

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DeFilippis, however, discloses a permanent magnet brushless DC motor comprising rotor (2) having a plurality of P.Ms received by cylindrical iron-metal housing (7). Those skilled in the art would realize that the iron cylindrical housing not only provides mechanical support for the PM rotor but also function as a magnetic flux return means in the rotor's magnetic circuit, i.e., the iron housing is a magnetic conducting means for the magnetic paths between PM segments.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by providing a cylindrical metal housing forming a part of the rotor for receiving the permanent magnets, as taught by DeFilippis. Doing so would provide a means to mechanically support the PM segments and magnetically conducting magnetic flux paths in the rotor's magnetic circuit to enhance magnetic characteristics of the rotor.

Since the Syverson's motor is shown being disposed inside the roller, the motor assembly would extend substantially an entire length of the roller.

4. **Claims 3-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson and De Filippis, as applied in the rejections against the base claims, and further in view of Shiba et al (US 5524805).

The combination of Syverson and De Filippis refs discloses the claimed invention, except for the limitations of the motor assembly extends partly inside the roller.

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Shiba, however, teaches a motor (E) assembly extends partly inside the roller (R) (fig 2). Regarding the housing being force fit inside the roller, Shiba teaches the housing of rotor (5) is partially fit inside the roller (R), whether it is done by force fit or other mechanical means is a process of assembling the product, i.e., the roller with the motor assembly. The method of forming the device is not germane to the issue of patentability of the device itself. (*In re Thorpe*, 227 USPQ 964, 966.)

Those skilled in the art would realize that the shape and size of the motor depend upon a particular application of the roller assembly, i.e., the required output power needed from the motor as well as the overall size of the roller. Furthermore, the size and shape of the roller are in turn depends on the roller's particular industrial application. These two factors will determine whether the motor is fitted partially inside or entirely inside the roller. Motor being disposed only part way. The arrangements of the entire motor disposed within the roller or the motor only extends part way in the roller are known in the art, as disclosed by Syverson and Shiba.

Therefore, it would have been obvious at the time the invention was made to dispose the motor assembly only partially inside the roller, as taught by Shiba. Doing so would reduce the circumferential/ diameter dimension of the roller resulting in smaller and more compact roller. Furthermore, it has been held that change in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955). Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was

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made to rearrange the motor so that it only located partially inside the roller. This is obvious because it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

5. **Claims 8-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson and De Filippis, as applied in the rejections against the base claims, and further in view of level of ordinary skills of a worker in the art and Fujitani et al (US 5834866).

The combination of Syverson and De Filippis refs discloses the claimed invention, except for the limitations of the stator coil being configure with a number of turns and the coil's wire is selected with a gauge to produce 10RMS volts per 100 RPM for an applied stator voltage of 24 RMS volts per phase, and each stator coil encircles a single stator tooth.

Regarding a selection of the wire's gauge size and a number of turns of the wire to form a stator coil so that the stator coil would produce 10RMS volts per 100 RPM for an applied stator voltage of 24 RMS volts per phase, this is a matter of obvious engineering design choice because of the following:

Syverson discusses about the gauge size of the wire and the speed of the motor (col 4, lines 1-58) at various size of the wire gauge and various coil turns of stator's windings. Thus, those skilled in the art would understand that, by applying the Syverson's disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the stator of the Syverson's motor by selecting an appropriate wire's gauge size and

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determine an appropriate number of coil turns in order to obtain a workable range between the ratio of the voltage to the speed of the motor. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges, in this case the range of number of turns of the windings and the range of the wire gauge size, involves only routine skill in the art. **In re Aller, 105 USPQ 233.**

Regarding each stator coil encircle a single stator tooth, Fujitani discloses a stator having each stator coil concentrately wound around each stator pole in an encircled manner for obtaining high magnetic efficiency for the motor. Concentrate winding by encircling coil around each magnetic pole is well known in the art (see cited refs).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by configuring the stator winding as concentrate winding each coil per stator pole, as taught by Fujitani. Doing so would obtain high magnetic efficiency for the motor.

6. **Claims 10-12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson and De Filippis, as applied in the rejections against the base claim, and further in view of Von Der Heide (US 4882511).

Syverson discloses the motor is a brushless motor, i.e., a motor having a driving circuit that is a circuit electronically commutates current to the stator coil. However, Syverson does not disclose the electronic controller circuit with position sensors. Thus, the combination of

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Syverson and De Filippis refs discloses the claimed invention, except for the limitations of the sensor having three Hall effect devices mounted on a circuit board with electronic circuit controller for controlling commutation of current to the stator.

Von Der Heide, however, teaches a brushless motor having an electronic controller including three position sensors (42-44) disposed on a circuit board located within a motor housing (figs 2-3) for providing a motor with improving torque constancy. The Examiner also takes Official Notice that position sensor is a well-known component in dynamoelectric machinery art.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by providing a position sensor having three Hall effect devices mounted on a circuit board with electronic circuit controller for controlling commutation of current to the stator, as taught by Von Der Heide. Doing so would provide the motor with a detection means for positioning the rotor for improving torque constancy of the motor.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran Nguyen whose telephone number is (703) 308-1639.

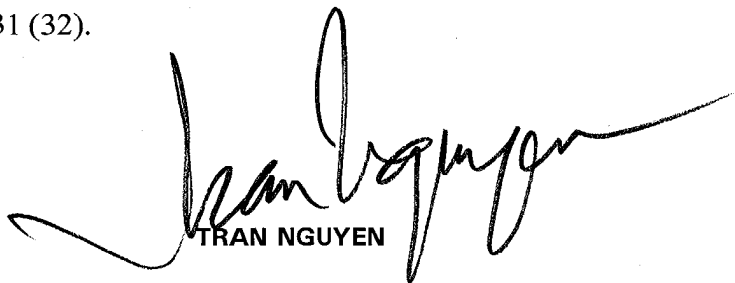
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Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. The fax phone number for this Group is (703) 305-3431 (32).

A handwritten signature in black ink, appearing to read 'Tran Nguyen', is written over the printed name.

TRAN NGUYEN

PRIMARY PATENT EXAMINER

TC-2800